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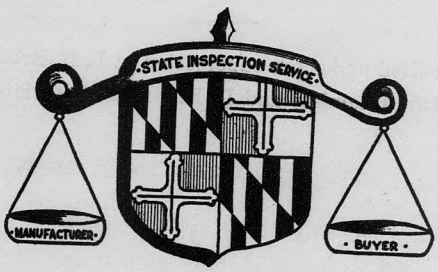
Agricultural Liming Materials

This Publication constitutes an official report of the activities of the Lime Inspection Service from November 1, 1927, to November 1, 1928. This Service protects the buyers of agricultural liming materials from illegal purchases as well as the honest manufacturers from unfair competition.



STATE LIME INSPECTION SERVICE
Controlled by
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AGRICULTURAL LIMING MATERIALS

November 1, 1927—November 1, 1928

Compiled and edited under the supervision of L. B. Broughton, Acting State Chemist; and L. E. Bopst, Associate.

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STATE INSPECTION AND REGULATORY SERVICE

Limes, Feeds and Fertilizer

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INTRODUCTION

The duties of the Lime Inspection Service as set forth in the State Lime Inspection Law, consists in the registration of brands to be offered for sale; the inspection of methods of labelling and selling; the collection and analysis of official samples, and the publication of results obtained. This publication constitutes a report of the work performed from November 1, 1927 to November 1, 1928 and contains a record of the analysis of official samples obtained during that period.

State Lime Inspectors collected from dealers and manufacturers' stocks and from shipments in transit 110 samples of agricultural liming materials as compared to 96 during the corresponding period the year before. To establish the correctness of the required guarantees all samples were subjected to separate determinations for Calcium Oxide, Magnesium Oxide and acid insoluble material. In the case of the two carbonates, raw limestone and ground oyster shells, determinations were also made for the degree of fineness or sieve mesh through which all of the material would pass upon screening.

In addition to the chemical examination of official samples, 38 other determinations were made gratuitously on samples forwarded by residents of the State. These results are not included in our official reports. In this connection, it should be borne in mind that this Department cannot perform work in such volume or with such frequency as to exercise a systematic control over purchases. This clearly encroaches upon the territory of the commercial Laboratory.

The general character of the 110 samples of liming materials secured by department representatives are as follows:

Hydrated Limes	39
Burnt Limes	27
Ground Limestone, Marl and Oyster Shells	34
Gypsum or Land Plaster	3
Miscellaneous	7
Total	110

SELECTING A LIMING MATERIAL

Primarily the main duty of any State Lime Inspection Service is to enforce the provisions of the Lime Law as passed by the State Legislature. This consists mainly in the registration of brands; supervision of methods of labeling and selling; chemical examination of products; publication of results, and when necessary, prosecution of violations. During the course of each year, however, this Department receives many inquiries from lime bulletin readers as to the best liming material to purchase. Realizing that the dissemination of such information is not within the province of a control laboratory,

such inquiries are usually referred to the State Agricultural Experiment Station or the State Extension Service. But in order for a lime user to best answer this question, he must have the results of inspection of products sold in the State and which are published solely in this bulletin. For this reason it was thought advisable to request the State Extension Service to give a brief discussion regarding the method they would use in determining the best and most economical product to purchase.

The following is a contribution from F. W. Oldenburg, of the State Extension Service, in answer to the inquiry—

"What Kind of Lime Should I Buy?"

Naturally, individual cases differ and there is no general answer which can be given to all. There are, however, certain general principles which can be applied to the solution of specific problems.

It may be well to begin by considering just what the functions of liming materials are. In the first place, calcium and magnesium, the two chief constituents of limes, are actually plant foods in the same sense as are nitrogen, phosphoric acid and potash. It is true that most plants use calcium and magnesium only in small quantities and that most soils contain sufficient quantities of these elements to meet the needs of plant growth. Some soils, however, have had their calcium or magnesium exhausted in the course of long cropping and leaching.

In the second place, some soils (especially heavy clays) are much improved in physical condition by the application of lime.

The third and a very important function of lime is the correction of soil acidity.

Unless, then, the soil to be treated is deficient in calcium or magnesium or unless the crop to be grown demands unusually large quantities of one or the other of these elements, the question narrows down to how to get the most for the money expended. This question can be answered by calculating the cost of a unit of effective oxides delivered at the farm for a number of different limes and selecting that one which shows the lowest cost.

Let us suppose a farmer is planning to buy his supply of lime. He asks, "What is the best form of lime to buy?" The answer is, "There is no best form of lime; all are equally good provided equivalent amounts of finely pulverized material are used." It is good business for the farmer to buy that form of lime which gives him the greatest number of pounds for a dollar, of finely pulverized material as computed on the basis of available oxides.

How can the farmer figure this out? The following explanation it is hoped, will be helpful.

On pages 8 to 15 will be found the percentage of oxides in the limes analyzed and on page 15 will be found the fineness reported for the ground limestone and for oyster shells where fineness is a factor.

We will suppose that the farmer lives on the Eastern Shore, five miles from a railroad station. He has secured prices, delivered at the station, on a number of limes. To each price, must be added the cost of hauling to the farm which is assumed to be 50 cents for the first ton mile and 30 cents for each ton mile thereafter, or in this particular case, $1.70 per ton additional.

Calculating the cost of Available Oxides in the various kinds of lime may be done as follows:

(*a*) Hydrated Lime
(1) Cost per ton in bags at railroad station $11.65
Cost of hauling to the farm 1.70

Total cost ..... $13.35 per ton.

(2) Total per cent. of oxides, 70 per cent.
(3) Total available oxides in a ton (2000×70%)=1400 lbs.
(4) If $13.35 buys 1400 lbs., then $1.00 buys—1400 lbs.÷13.35 or 105 lbs.

(*b*) Pulverized Burned Lime.
(1) Cost per ton in bags at railroad station $11.40
Cost per ton of hauling to the farm 1.70

Total cost ..... $13.10 per ton.

(2) Total per cent. of oxides, 85 per cent.
(3) Total available oxides per ton (2000×85%)=1700 lbs.
(4) If $13.10 buys 1700 lbs. of available oxides, then $1.00 buys—1700 lbs.÷$13.10=130 lbs.

(*c*) Pulverized Oyster Shells.
(1) Cost per ton in bulk at railroad station $7.50
Cost of hauling to farm 1.70

Total cost ..... $9.20 per ton.

(2) Total per cent. of oxides, 42.7 per cent.
(3) Total oxides in a ton (2000 lbs.×42.7%)=854 lbs.

In the case of pulverized limestone and pulverized oyster shells, only the part that is fine enough to pass a 60 mesh screen is given full credit for availability. The part between 20 and 60 mesh is not so readily available and is usually given half credit, while the part that will not pass a 20 mesh screen is of so little value that it is usually not considered.

Consulting the table giving the mechanical analysis suppose the farmer finds:—

Total between 60 and 100 mesh ..... 50% of whole.
Total between 20 and 60 mesh 42 per cent., considered ½ available ..... 21% of whole.
Total coarser than 20 mesh 8 per cent., not considered 0

Total 71%

(3) Total oxides, 854 lbs.
Fine enough to be available, 71 per cent.
Total available oxides per ton (854×71%)=606 lbs.
(4) If $9.20 buys 606 lbs., then $1.00 buys 66 lbs.

(*d*) Pulverized Lime Stone.

(1) Cost per ton in bags at railroad station	$6.15
Cost of hauling to the farm	1.70
Total cost	$7.85 per ton.

(2) Total per cent. of oxides, 54.9 per cent.
(3) Total oxides in a ton (2000×54.9%)=1098 lbs.
(4) Consulting the table giving the mechanical analysis, it is found that all of this product is finer than 60 mesh, so that it is given full credit for availability.
If $7.85 buys 1098 lbs. of available oxide, then $1.00 buys—1098÷$7.85=139 lbs.

(*e*) Lump Lime.

(1) Cost per ton in bulk at railroad station	$9.15
Cost of hauling to the farm	1.70
Cost of stacking (estimated)	1.00
Cost of bags (to put this material on same basis as the rest)	1.00
Total cost	$12.85 per ton.

(2) Total per cent of oxides, 93 per cent.
(3) Total oxides (2000×93%)=1860 lbs.
(There is on an average about 20 per cent. of this product that fails to become fine enough to be available.)
Available oxides 1860×80%=1488 lbs.
(4) If $12.85 buys 1488 lbs., then $1.00 buys—1488÷12.85=116 lbs.

SUMMARY OF COST OF AVAILABLE OXIDES OF LIME

Material	Number of Pounds $1.00 will buy
(*a*) Hydrated Lime	105 lbs.
(*b*) Pulverized Burned Lime	130 lbs.
(*c*) Pulverized Oyster Shells	66 lbs.
(*d*) Pulverized Lime Stone	139 lbs.
(*e*) Lump Lime	116 lbs.

In the case of these five limes, product *d* would give the farmer the most for his money.

TABLES

The following pages contain a detailed report of the results obtained in the regulation of the sale of limes in this State from November 1, 1927 to November 1, 1928. Limes are considered deficient with respect to chemical analysis when they are one per cent. or more deficient in total oxides.

ANALYSES OF AGRICULTURAL BURNT LIME (OXIDES)

No.	Name of Manufacturer or Agent	Name of Lime	Place of Sampling	Calcium Oxide CaO		Magnesium Oxide MgO		Sand & Insol. (no Val.)	Total Oxides CaO + MgO
				Found	Guaranteed	Found	Guaranteed	Found	
2075	S. W. Barrick & Sons, Woodsboro, Md.	Agricultural Lump Lime.	Woodsboro	**89.94**	85.00	**5.00**	5.00	**1.36**	**94.94**
1967	S. W. Barrick & Sons, Woodsboro, Md.	Agricultural Lump Lime.	Woodsboro	**91.24**	85.00	**2.46**	5.00	**.48**	**93.70**
1968	S. W. Barrick & Sons, Woodsboro, Md.	Pulverized Quick Lime	Woodsboro	**83.44**	65.00	**2.61**	5.00	**3.90**	**86.05**
2078	S. W. Barrick & Sons, Woodsboro, Md.	Pulverized Quick Lime	Woodsboro	**70.67**	65.00	**7.19**	5.00	**7.30**	**77.86**
2017	Blair Limestone Co., Pittsburgh, Pa.	Shenandoah Ground Burned Lime	Mt. Lake Park	**54.77**	48.00	**26.22**	32.00	**4.92**	**80.99**
1982	Blair Limestone Co., Pittsburgh, Pa.	Shenandoah Ground Burned Lime	Jessups.	**49.17**	48.00	**33.20**	32.00	**7.36**	**82.37**
2077	Geo. M. Bushey & Sons, Cavetown, Md.	Lump Lime.	Cavetown	**75.04**	80.00	**19.84**	2.00	**1.36**	**94.88**
2076	Geo. M. Bushey & Sons, Cavetown, Md.	Ground Burnt Lime	Cavetown	**67.20**	80.00	**15.34**	2.00	**5.16**	**82.54**
2102	M. J. Grove Lime Co., Lime Kiln, Md.	Famous Frederick Co. Ground Lime	Frederick.	**66.08**	65.00	**6.44**	5.00	**9.80**	**72.52**
2099	M. J. Grove Lime Co., Lime Kiln, Md.	Famous Frederick Co. Agricultural Lime	Frederick.	**96.32**	65.00	**2.46**	5.00	**.36**	**98.78**
1978	M. J. Grove Lime Co., Lime Kiln, Md.	Famous Frederick Co. Agricultural Lime	Frederick.	**82.90**	65.00	**15.82**	5.00	**.36**	**98.72**
2020	John S. Hyde, Westminster, Md.	Agricultural Lump Lime.	New Windsor	**94.86**	85.00	**1.95**	5.00	**2.44**	**96.81**
2023	LeGore Lime Co., LeGore, Md.	Lump Lime.	LeGore.	**92.62**	80.00	**1.37**	3.00	**2.96**	**93.99**
*2080	LeGore Lime Co., LeGore, Md.	Ground Burnt Lime	LeGore.	**69.50**	80.00	**6.66**	3.00	**7.82**	**76.16**
*2022	LeGore Lime Co., LeGore, Md.	Ground Burnt Lime	LeGore.	**72.69**	80.00	**7.75**	3.00	**7.36**	**80.44**

2059	Henry Mosser, Oakland, Md	Burnt Lime	Oakland	**70.53**	70.00	**.80**	.50	**7.33**	**71.33**
2013	Marshall Porter, Eckhart, Md.	Lump Lime	Cresaptown	**71.06**	70.00	**13.35**	13.00	**1.40**	**84.41**
2103	Shank & Etzler Lime Co., Frederick, Md	Agricultural Lump Lime	Frederick	**64.62**	60.00	**33.66**	30.00	**.60**	**98.28**
1975	Shank & Etzler Lime Co., Frederick, Md	Agricultural Lump Lime	Frederick	**62.94**	60.00	**31.56**	30.00	**.10**	**94.50**
*2104	Shank & Etzler Lime Co., Frederick, Md	Ground Burned Lime	Frederick	**52.19**	55.00	**26.06**	25.00	**4.32**	**78.25**
2015	William A. Snyder, Accident, Md.	Ground Burnt Lime	Accident	**48.05**	48.00	**1.52**	.50	**10.30**	**49.57**
*2029	H. M. Spahr Lime & Stone Co., Spahr, Md.	Calimag Lump Lime	Spahr	**60.14**	60.00	**26.36**	30.00	**2.96**	**86.50**
*2027	H. M. Spahr Lime & Stone Co, Spahr, Md.	Calimag Ground Lime	Spahr	**54.94**	60.00	**31.46**	30.00	**5.08**	**86.40**
2083	Stoner & Powell, Fountain Rock, Md.	Old Reliable Fountain Rock Lump Lime	Fountain Rock	**91.62**	85.00	**1.87**	2.00	**1.00**	**93.49**
2035	Stone & Powell, Fountain Rock, Md.	Old Reliable Fountain Rock Lump Lime	Walkersville	**91.45**	85.00	**4.20**	2.00	**.60**	**95.65**
*2085	Stoner & Powell, Fountain Rock, Md.	Old Reliable Fountain Rock Ground Lime	Fountain Rock	**67.20**	85.00	**7.09**	2.00	**6.60**	**74.29**
*2030	Stone & Powell, Fountain Rock, Md.	Old Reliable Fountain Rock Ground Lime	Walkersville	**72.58**	85.00	**10.28**	2.00	**9.60**	**82.86**

ANALYSES OF AGRICULTURAL HYDRATED LIME

2079	S. W. Barrick & Sons, Woodsboro, Md	Agricultural Hydrated Lime	Woodsboro	**65.85**	60.00	**6.30**	5.00	**4.90**	**72.15**
1969	S. W. Barrick & Sons, Woodsboro, Md	Agricultural Hydrated Lime	Woodsboro	**68.32**	60.00	**2.61**	5.00	**4.20**	**70.93**
2087	Blair Limestone Co., Pittsburgh, Pa	Blair Special Hydrated Lime	Salisbury	**63.17**	60.00	**3.11**	1.00	**4.24**	**66.28**
2073	Blair Limestone Co., Pittsburgh, Pa	Blair Special Hydrated Lime	Rockville	**63.17**	60.00	**1.42**	1.00	**11.36**	**64.59**
2086	Central Chemical Co., Hagerstown, Md	"Gro-All" Hydrated Lime	Hancock	**72.24**	70.00	**.62**	2.00	**.24**	**72.86**

* Indicates product deficient in total oxides.

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ANALYSES OF AGRICULTURAL HYDRATED LIME

No.	Name of Manufacturer or Agent	Name of Lime	Place of Sampling	Calcium Oxide CaO		Magnesium Oxide MgO		Sand & Insol. (no Val.)	Total Oxides CaO + MgO
				Found	Guaranteed	Found	Guaranteed	Found	
2101	M. J. Grove Lime Co., Frederick, Md	Famous Frederick Co. Hydrated Lime	Frederick	**65.17**	65.00	**5.72**	5.00	**4.10**	**70.89**
1976	M. J. Grove Lime Co., Frederick, Md	Famous Frederick Co. Hydrated Lime	Frederick	**66.08**	65.00	**6.74**	5.00	**2.90**	**72.82**
1965	M. J. Grove Lime Co., Frederick, Md	Famous Frederick Co. Hydrated Lime	Rockville	**68.88**	65.00	**1.88**	5.00	**2.16**	**70.76**
*2061	O. J. Keller Lime Co., Buckeystown, Md	Keller's Hydrate	Laurel	**67.38**	70.00	**2.57**	2.00	**5.00**	**69.95**
2021	O. J. Keller Lime Co., Buckeystown, Md	Keller's Hydrate	Buckeystown	**69.33**	70.00	**2.10**	2.00	**3.72**	**71.43**
2067	LeGore Lime Co., LeGore, Md	Hydrated Lime	Baltimore	**63.39**	60.00	**2.65**	3.00	**3.53**	**66.04**
2063	LeGore Lime Co., LeGore, Md	Hydrated Lime	La Plata	**61.84**	60.00	**5.57**	3.00	**3.20**	**67.41**
2045	LeGore Lime Co., LeGore, Md	Hydrated Lime	Baltimore	**64.34**	60.00	**1.20**	3.00	**4.64**	**65.54**
1985	LeGore Lime Co., LeGore, Md	Hydrated Lime	Owings Mills	**58.24**	60.00	**7.83**	3.00	**4.20**	**66.07**
1972	LeGore Lime Co., LeGore, Md	Hydrated Lime	Westminster	**64.74**	60.00	**3.76**	3.00	**2.80**	**68.50**
1970	LeGore Lime Co., LeGore, Md	Hydrated Lime	LeGore	**64.06**	60.00	**3.18**	3.00	**5.10**	**67.24**
2047	North American Cement Corp., Hagerstown, Md	Berkeley Hydrated Lime	Upper Marlboro	**72.90**	70.00	**1.26**	2.00	**.28**	**74.16**
2046	North American Cement Corp., Hagerstown, Md	Berkeley Hydrated Lime	Clinton	**71.45**	70.00	**1.40**	2.00	**.24**	**72.85**
2025	North American Cement Corp., Hagerstown, Md	Berkeley Hydrated Lime	Gaithersburg	**71.56**	70.00	**1.23**	2.00	**.16**	**72.79**
2105	Shank & Etzler Lime Co., Frederick, Md	Hydrated Lime	Frederick	**51.88**	45.00	**22.51**	20.00	**2.44**	**74.39**

2066	Shank & Etzler Lime Co., Frederick, Md.	Hydrated Lime.	Waldorf	**45.13**	45.00	**19.91**	20.00	**3.40**	**65.04**
1974	Shank & Etzler Lime Co., Frederick, Md.	Hydrated Lime.	Frederick.	**45.92**	45.00	**25.92**	20.00	**4.00**	**71.84**
2081	H. M. Spahr Lime & Stone Co., Spahr, Md.	Calimag Hydrated Lime.	Spahr	**57.12**	50.00	**14.26**	15.00	**4.10**	**71.38**
2028	H. M. Spahr Lime & Stone Co., Spahr, Md.	Calimag Hydrated Lime.	Spahr	**49.84**	50.00	**27.71**	15.00	**3.28**	**77.55**
2096	Steacy & Wilton Co., Wrightsville, Pa.	Sterling Brand Hydrated Lime	Colora	**68.77**	67.00	**3.62**	5.00	**1.60**	**72.39**
2034	Steacy & Wilton Co., Wrightsville, Pa.	Sterling Brand Hydrated Lime.	Westminster	**68.32**	68.00	**4.56**	5.00	**1.40**	**72.88**
1973	Steacy & Wilton Co., Wrightsville, Pa.	Sterling Brand Hydrated Lime.	Taneytown	**70.36**	67.00	**4.13**	5.00	**1.32**	**74.49**
1971	Steacy & Wilton Co., Wrightsville, Pa.	Sterling Brand Hydrated Lime.	Hampstead	**70.00**	67.00	**4.77**	5.00	**1.64**	**74.77**
2084	Stoner & Powell, Fountain Rock, Md.	Old Reliable Hydrated Fountain Rock Lime.	Fountain Rock	**54.88**	60.00	**8.82**	2.00	**5.84**	**63.70**
2032	Stoner & Powell, Fountain Rock, Md.	Old Reliable Hydrated Fountain Rock Lime.	Walkersville	**60.29**	60.00	**10.51**	2.00	**5.34**	**70.80**
2109	Superior Lime Co., York, Pa.	Superior Brand Lime.	Baltimore	**66.08**	65.00	**5.21**	5.00	**.44**	**71.29**
2092	Van Sciver Corp., Philadelphia, Pa.	Knickerbocker Hydrated Lime.	Preston	**54.32**	45.00	**20.49**	30.00	**.20**	**74.81**
2091	Universal Gypsum & Lime Co., Chicago, Ill.	Palmer Hydrated Lime.	Aiken	**69.84**	65.00	**2.53**	5.00	**.32**	**72.37**
2006	Washington Building Lime Co., Baltimore, Md.	Standard Hydrated Lime	Baltimore	**73.30**	70.00	**1.11**	2.00	**.92**	**74.41**
2031	Washington Building Lime Co., Baltimore, Md.	Standard Hydrated Lime	Gaithersburg.	**70.78**	70.00	**2.03**	2.00	**1.88**	**72.81**
2062	Washington Building Lime Co., Baltimore, Md.	Standard Hydrated Lime	Hyattsville	**72.02**	70.00	**1.53**	2.00	**1.16**	**73.55**
2071	Washington Building Lime Co., Baltimore, Md.	Standard Hydrated Lime	Sykesville	**73.02**	70.00	**1.64**	2.00	**1.78**	**74.66**
1966	Washington Building Lime Co., Baltimore, Md.	Standard Hydrated Lime	Rockville	**70.00**	70.00	**1.92**	2.00	**1.04**	**71.92**
2095	Charles Warner Co., Wilmington, Del.	Limoid	Elkton	**49.64**	45.00	**28.06**	30.00	**1.12**	**77.70**

* Indicates product deficient in total oxides.

ANALYSES OF AGRICULTURAL LIMESTONE, MARL AND OYSTER SHELLS

No.	Name of Manufacturer or Agent	Name of Lime	Place of Sampling	Calcium Oxide CaO		Magnesium Oxide MgO		Sand & Insol. (no Val.)	Total Oxides CaO + MgO
				Found	Guaranteed	Found	Guaranteed	Found	
2072	Alba Marl Lime Co., Charles Town, W. Va.	Alba Marl	Charles Town W. Va	52.86	50.00	.53	.50	2.16	53.39
2107	Baugh & Sons Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore	45.92	42.00	.55	.50	13.36	46.47
2106	Herbert Bryant's Son, Alexandria, Va.	†Pulverized Oyster Shell Lime.	Gaithersburg.	46.82	45.00	.46		10.56	47.28
2007	Herbert Bryant's Son, Alexandria, Va.	†Pulverized Oyster Shell Lime.	Crisfield	48.27	45.00	.61		9.36	48.88
2088	Dorchester Shell & Lime Co., Cambridge, Md.	†Roasted Pulverized Oyster Shell Lime	Cambridge.	43.23	40.00	.43		14.48	43.66
2008	Dorchester Shell & Lime Co., Cambridge, Md.	†Roasted Pulverized Oyster Shell Lime	Cambridge.	45.02	40.00	.58		14.32	45.60
2049	East Coast Trading Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore	47.04	47.00	.58	.50	10.00	47.62
2044	East Coast Trading Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore	47.14	47.00	.58	.50	10.36	47.72
2043	East Coast Trading Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore	47.15	47.00	.53	.50	10.48	47.68
1954	East Coast Trading Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore	47.31	47.00	.55	.50	11.64	47.86
*1957	East Coast Trading Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore,	45.92	47.00	.54	.50	13.05	46.46
1962	East Coast Trading Co., Baltimore, Md.	†Oyster Shell Lime	Baltimore	47.04	47.00	.55	.50	10.88	47.59
1979	M. J. Grove Lime Co., Lime Kiln, Md.	Pulverized Limestone†	Baltimore	52.67	50.00	.54		1.90	53.21
1987	M. J. Grove Lime Co., Lime Kiln, Md.	†Pulverized Limestone	College Park	52.03	50.00	1.13		2.84	53.16
2100	M. J. Grove Lime Co., Lime Kiln, Md.	†Pulverized Limestone	Frederick.	52.31	50.00	1.81		3.00	54.12

2024	LeGore Lime Co., LeGore, Md.	†Pulverized Limestone	LeGore	45.41	45.00	4.41	2.00	19.30	49.82
2016	James O. Lore, Solomons, Md.	†Oyster Shell Lime	Solomons	53.30	50.00	.54	.50	4.48	53.84
1980	Patuxent Guano Co., Baltimore, Md.	Crushed Oyster Shell Lime	Baltimore	45.20	46.00	.63	.50	9.40	45.83
*2048	Natural Lime-Marl Co., ., Roanoke, Va.	Lime-Marl	Mt. Lake Park	48.66	50.00	.65	.50	8.24	49.31
*2108	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Baltimore	44.80	46.00	.57	.50	15.32	45.37
*2089	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Crisfield	44.80	46.00	.51	.50	15.32	45.31
*2068	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Baltimore	40.57	46.00	.58	.50	13.94	41.15
2074	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Hancock	46.04	46.00	.61	.50	10.40	46.65
*2069	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Sykesville	43.42	46.00	.61	.50	17.93	44.03
2026	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Gaithersburg	45.92	46.00	.52	.50	14.32	46.44
1955	Potomac Poultry Food Co., Inc., Baltimore, Md	†Potolime Oyster Shell Lime	Baltimore	45.14	46.00	.58	.50	12.12	45.72
2070	Standard Lime & Stone Co., Baltimore, Md	†Standard Pulverized Limestone	Sykesville	53.98	53.20	.72	.50	1.76	54.70
2065	Standard Lime & Stone Co., Baltimore, Md	†Standard Pulverized Limestone	La Plata	53.98	53.20	.54	.50	1.92	54.52
2058	Standard Lime & Stone Co., Baltimore, Md	†Standard Pulverized Limestone	Baltimore	54.18	53.20	1.23	.50	1.28	55.41
2051	Standard Lime & Stone Co., Baltimore, Md	†Standard Pulverized Limestone	Sykesville	54.26	53.20	1.10	.50	1.76	55.36
2082	Steacy & Wilton Co., Wrightsville, Pa.	†Pulverized Limestone	Taneytown	50.86	50.00	3.11		3.44	53.97
2009	W. H. Valliant & Bro., Bellevue, Md	†Baked and Ground Oyster Shell Lime	Bellevue	44.19	42.00	.65		14.12	44.84
2093	Charles Warner Co., Wilmington, Del.	†Pulverized Limestone	Greensboro	31.47	29.00	20.85	19.00	2.12	52.32
*2110	Beaver Dam Marble Co., Cockeysville, Md.	†Dolomitic Limestone	Cockeysville	30.24	30.00	19.19	21.00	7.92	49.43

* Indicates product deficient in total oxides.

† Ground shell or stone. Mechanical Analyses on page 15.

ANALYSES OF GYPSUM OR LAND PLASTER

No.	Name of Manufacturer or Agent	Name of Lime	Place of Sampling	Calcium Sulphate		Sand & Insol. (no value.)
				FOUND	Guaranteed	FOUND
2042	American Agricultural Chemical Co., New York, N. Y.	Fine Ground Nova Scotia Land Plaster	Baltimore	**81.85**	74.09	**1.90**
2038	G. Ober & Sons Co., Baltimore, Md.	Nova Scotia Land Plaster	Baltimore	**89.20**	77.70	**4.50**
1983	Summers Fertilizer Co., Baltimore, Md.	Ground Land Plaster	Jessup	**74.94**	74.00	**2.00**

ANALYSES OF MISCELLANEOUS PRODUCTS

No.	Name of Manufacturer or Agent	Name of Lime	Place of Sampling	Calcium Oxide CaO		Magnesium Oxide MgO		Sand & Insol. (no Val.)	Total Oxides CaO + MgO
				Found	Guaranteed	Found	Guaranteed	Found	
1964	Arundel Corporation, Baltimore, Md.	Slag Meal	Chestertown	**38.64**	30.00	**2.90**	5.00	**27.00**	**41.54**
2018	M. J. Grove Lime Co., Lime Kiln, Md.	Carbo-Oxide	Friendsville	**68.94**	35.00	**.63**	.50	**1.88**	**69.57**
2094	North American Cement Corporation, Hagerstown, Md.	Berkeley Hydra-Calcite Lime	Rising Sun	**67.20**	60.00	**2.66**	2.00	**.60**	**69.86**
*2090	F. W. Tunnell & Co., Phila. Pa.	Limonia	Colora	**24.30**	25.00	**4.56**	5.00	**21.08**	**28.86**
1986	J. E. Baker Co., York, Pa.	Agri Lime	Denton	**50.29**	45.50	**27.90**	29.50	**4.16**	**78.19**
2005	J. E. Baker Co., York, Pa.	Agri Lime	Easton	**62.72**	45.50	**20.62**	29.50	**6.28**	**83.34**
2039	J. E. Baker Co., York, Pa.	Agri Lime	Whiteford	**53.92**	45.50	**33.48**	29.50	**3.68**	**87.40**

* Indicates product deficient in total oxides.

† Ground shell or stone, Mechanical Analyses on page 15.

GROUND LIMESTONE AND GROUND OYSTER SHELLS TABLE II—SHOWING MECHANICAL ANALYSIS OF

For the Chemical Analyses of these samples, see preceding table. Figures are percentages or pounds per hundred. "Mesh" indicates the sieve used; "20 Mesh" has 20 wires to the inch.

No.	Name of Manufacturer or Agent	Name of Lime or Kind	Finer than 100 Mesh	Between 80 & 100 Mesh	Between 60 & 80 Mesh	Between 40 & 60 Mesh	Between 20 & 40 Mesh	Coarser than 20 Mesh
2107	Baugh & Sons Co., Baltimore, Md.	Oyster Shell Lime	52	5	2	11	27	3
2106	Herbert Bryant's Son, Alexandria, Va.	Pulverized Oyster Shell Lime	48	5	2	8	25	12
2007	Herbert Bryant's Son, Alexandria, Va.	Pulverized Oyster Shell Lime	46	7	4	12	26	5
2088	Dorchester Shell & Lime Co., Cambridge, Md.	Roasted Pulv. Oys. Shell Lime	47	4	3	14	30	2
2008	Dorchester Shell & Lime Co., Cambridge, Md.	Roasted Pulv. Oys. Shell Lime	47	8	4	13	26	2
2049	East Coast Trading Co., Baltimore, Md.	Oyster Shell Lime	42	7	3	12	30	6
2044	East Coast Trading Co., Baltimore, Md.	Oyster Shell Lime	41	8	3	13	31	4
2043	East Coast Trading Co., Baltimore, Md.	Oyster Shell Lime	43	7	6	14	27	3
1954	East Coast Trading Co., Baltimore, Md.	Oyster Shell Lime	43	6	4	12	34	1
1957	East Coast Trading Co., Baltimore, Md.	Oyster Shell Lime	46	8	3	12	30	1
1962	East Coast Trading Co., Baltimore, Md.	Oyster Shell Lime	48	7	3	11	29	2
1979	M. J. Grove Lime Co., Lime Kiln, Md.	Pulverized Limestone	82	10	2	5	1	0
1987	M. J. Grove Lime Co., Lime Kiln, Md.	Pulverized Limestone	87	8	1	3	1	0
2100	M. J. Grove Lime Co., Lime Kiln, Md.	Pulverized Limestone	89	7	1	2	1	0
2024	LeGore Lime Co., LeGore, Md.	Pulverized Limestone	94	5	1	0	0	0
2016	James O. Lore, Solomons, Md.	Oyster Shell Lime	37	6	2	10	23	22
2108	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	60	5	2	9	22	2
2089	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	47	5	2	12	28	6
2068	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	54	2	2	10	25	7
2074	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	57	5	2	9	21	6
2069	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	49	8	4	12	27	0
2026	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	56	6	4	11	22	1
1955	Potomac Poult. Food Co., Inc., Balto., Md.	Potolime Oyster Shell Lime	53	8	2	11	25	1
2070	Standard Lime & Stone Co., Baltimore, Md.	Standard Pulverized Limestone	92	6	2	0	0	0
2065	Standard Lime & Stone Co., Baltimore, Md.	Standard Pulverized Limestone.	*79	8	2	5	6	0
2058	Standard Lime & Stone Co., Baltimore, Md.	Standard Pulverized Limestone	96	4	0	0	0	0
2051	Standard Lime & Stone Co., Baltimore, Md.	Standard Pulverized Limestone.	*75	8	2	6	9	0
2082	Steacy & Wilton, Co. Wrightsville, Pa.	Pulverized Limestone	82	3	1	8	6	0
2009	W. H. Valliant & Bro., Bellevue, Md.	Baked and Gr. Oys. Shell Lime	58	6	2	12	20	2
2093	Charles Warner Co., Wilmington, Del.	Pulverized Limestone	96	2	0	2	0	0
2110	Beaver Dam Marble Co., Cockeysville, Md.	Dolomitic Limestone	68	6	3	10	13	0

* Sample drawn from material manufactured prior to August 1.